

**SOAH DOCKET NO. 582-07-2673  
TCEQ DOCKET NO. 2007-0204-WDW**

APPLICATION OF TEXCOM GULF	§	BEFORE THE STATE OFFICE
DISPOSAL, L.L.C. FOR TEXAS	§	
COMMISSION ON ENVIRONMENTAL	§	OF
QUALITY UNDERGROUND INJECTION	§	
CONTROL PERMIT NOS. WDW410,	§	
WDW411, WDW412, and WDW413	§	ADMINISTRATIVE HEARINGS

**SOAH DOCKET NO. 582-07-2674  
TCEQ DOCKET NO. 2007-0362-IHW**

APPLICATION OF TEXCOM GULF	§	BEFORE THE STATE OFFICE
DISPOSAL, L.L.C. FOR TEXAS	§	
COMMISSION ON ENVIRONMENTAL	§	OF
QUALITY INDUSTRIAL SOLID WASTE	§	
PERMIT NO. 87758	§	ADMINISTRATIVE HEARINGS

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**SUPPLEMENTAL PRE-FILED TESTIMONY OF**

**PAUL J. PEARCE, Ph.D.**

**ON BEHALF OF ALIGNED PROTESTANTS**

**MONTGOMERY COUNTY AND CITY OF CONROE**

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1 I. BACKGROUND

2 Q. PLEASE STATE YOUR NAME.

3 A. Paul Pearce.

4 Q. HOW ARE YOU EMPLOYED?

5 A. I am the President and Owner of Nova Biologicals in Conroe, Texas.

6 Q. DID YOU PREVIOUSLY GIVE TESTIMONY IN THIS CONTESTED CASE  
7 HEARING?

8 A. Yes.

9 Q. WERE YOU PREVIOUSLY ADMITTED AS AN EXPERT ON WATER  
10 CHEMISTRY, WATER QUALITY, THE TESTING OF GROUNDWATER  
11 FOR EPA REGULATORY COMPLIANCE, THE DETERMINATION OF  
12 COMPLIANCE WITH EPA DRINKING WATER REGULATIONS, AND THE  
13 NEGATIVE HEALTH EFFECTS OF CONTAMINANTS IN DRINKING  
14 WATER?

15 A. Yes.

16 Q. ARE YOU FAMILIAR WITH WATER TREATMENT PROCESSES, BY  
17 WHICH I MEAN TECHNIQUES AND PROCESSES NECESSARY TO MAKE  
18 WATER POTABLE FOR HUMAN CONSUMPTION?

19 A. Yes.

20 Q. ARE YOU ALSO FAMILIAR WITH PROCESSES, WHICH I TERM  
21 "TREATMENT OF WATER," MEANING THE PROCESSES NECESSARY  
22 TO MAKE A WASTEWATER STREAM ACCEPTABLE AND  
23 APPROPRIATE FOR DISCHARGE INTO SURFACE WATER SOURCES?

1 A. Yes.

2 Q. WHAT IS THE BASIS OF YOUR FAMILIARITY AND KNOWLEDGE?

3 A. My professional experience and my responsibilities as a microbiologist and  
4 working with public utilities and public water systems.

5 Q. ARE YOU FAMILIAR WITH PUBLICLY OWNED TREATMENT WORKS?

6 A. Yes. The understanding and evaluation of publicly owned treatment works, or  
7 POTWs, is important because it is a microbiological process, and my background  
8 allows me to evaluate those aspects of the wastewater treatment plant from a  
9 microbiological standpoint. When we evaluate or consider the wastewater stream  
10 that goes into a POTW, we have to look at the impact on the microbiology of that  
11 wastewater treatment plant, and that is how I am involved. Thus, I am very  
12 familiar with the methods, means, and equipment that are used in a POTW.

13 Q. DOES THE CITY OF CONROE, TEXAS, HAVE SUCH A FACILITY?

14 A. Yes, they do.

15 Q. HOW MANY DO THEY HAVE, IF YOU KNOW?

16 A. They have one.

17 Q. HOW MANY EXIST IN MONTGOMERY COUNTY, IF YOU KNOW?

18 A. I do not know that.

19 Q. IS THERE AN ADDITIONAL POTW IN THE SOUTH PART OF THE  
20 COUNTY, THE WOODLANDS AREA, IF YOU KNOW?

21 A. Yes, I believe there is at least one.

1 Q. SO IS IT FAIR TO SAY THAT YOU HAVE WORKED WITH AND  
2 ANALYZED AND ASSESSED THE EFFICIENCY AND APPROPRIATE  
3 TREATMENT PROCESSES OF A POTW?

4 A. Yes, that is a fair statement.

5 Q. ARE YOU FAMILIAR WITH THE TREATMENT PROCESSES AND THE  
6 EFFICIENCY OF THE PUBLICLY OWNED TREATMENT WORKS THAT IS  
7 OWNED BY THE CITY OF CONROE, TEXAS?

8 A. Yes.

9 Q. WHAT IS THE BASIS OF YOUR FAMILIARITY WITH THE CITY OF  
10 CONROE'S POTW?

11 A. We evaluate the microbiological aspects of their effluent.

12 Q. HOW LONG HAVE YOU UNDERTAKEN THIS RESPONSIBILITY?

13 A. Since 1993, so 16 years.

14 Q. DOES THIS TESTING HAVE ANY RELATION TO ENSURING THE  
15 QUALITY OR THE CONDITION OF THE WASTE STREAM THAT IS  
16 GENERATED BY THE CONROE POTW?

17 A. Yes.

18 Q. WHERE DOES THE EFFLUENT PRODUCED BY THE CONROE POTW GO?

19 A. It goes into the San Jacinto River.

20 Q. SO IS IT IMPORTANT AS FAR AS YOU ARE CONCERNED TO MAKE  
21 SURE THAT THE WASTE STREAM THAT ENTERS THE SAN JACINTO  
22 RIVER FROM THE CONROE POTW IS AN APPROPRIATE AND

1 ACCEPTABLE WASTE STREAM, BOTH CHEMICALLY AND  
2 BIOLOGICALLY?

3 A. Yes.

4 Q. WITH RESPECT TO DRINKING WATER IN MONTGOMERY COUNTY,  
5 TEXAS, DO YOU HAVE ANY RELATIONSHIP WITH ANY MUNICIPAL  
6 UTILITY DISTRICTS OR OTHER ENTITIES THAT PRODUCE DRINKING  
7 WATER?

8 A. Yes.

9 Q. HOW MANY OF THESE DRINKING WATER PRODUCING ENTITIES DO  
10 YOU HAVE SOME KIND OF RELATIONSHIP WITH?

11 A. Approximately 30 or 40 in Montgomery County.

12 Q. WHAT ARE THE FUNCTIONS OR DUTIES THAT YOU UNDERTAKE FOR  
13 THESE ENTITIES?

14 A. Our responsibility is to help these drinking water systems evaluate the quality of  
15 the water that they distribute to their customers. So we test their water each  
16 month and provide those results to the Texas Commission on Environmental  
17 Quality.

18 Q. ARE YOUR PROCESSES FOR TESTING CONROE'S POTW EFFLUENT  
19 AND YOUR PROCESSES FOR TESTING THE DRINKING WATER FOR  
20 WATER SOURCES IN MONTGOMERY COUNTY "MICROBIOLOGICAL  
21 PROCESSES," OR HOW WOULD YOU CHARACTERIZE THEM?

22 A. Yes. What Nova does is a microbiological testing process for both the drinking  
23 water and the effluent.

1 Q. HOW DOES THAT RELATE TO YOUR EDUCATION AND EXPERIENCE,  
2 THIS MICROBIOLOGICAL PROCESS THAT YOU UNDERTAKE?

3 A. My experience and training from years ago and currently is in the microbiology of  
4 water, microbiological testing. From the time I was a laboratory director in  
5 Wichita Falls, Texas, to now, it has all been involved with the microbiological  
6 testing and evaluation of wastewater effluent and drinking water.

7 Q. SO IS IT FAIR TO SAY THAT IS WHAT YOUR CAREER HAS BEEN  
8 BASED UPON?

9 A. Yes.

10 **AT THIS TIME THE ALIGNED PROTESTANTS, MONTGOMERY COUNTY**  
11 **AND THE CITY OF CONROE, OFFER DR. PAUL PEARCE AS AN EXPERT**  
12 **ON WATER CHEMISTRY, WATER QUALITY, THE TESTING OF**  
13 **GROUNDWATER FOR EPA REGULATORY COMPLIANCE, THE**  
14 **DETERMINATION OF COMPLIANCE WITH EPA DRINKING WATER**  
15 **REGULATIONS; AND ADDITIONALLY, ALIGNED PROTESTANTS OFFER**  
16 **DR. PEARCE AS AN EXPERT ON THE NEGATIVE HEALTH EFFECTS OF**  
17 **CONTAMINANTS IN DRINKING WATER, AND FURTHER OFFER DR.**  
18 **PEARCE AS AN EXPERT ON THE PROCESSES FOR TREATING DRINKING**  
19 **WATER AND FOR TREATING THE WASTEWATER STREAM THAT IS**  
20 **PROCESSED THROUGH A PUBLICLY OWNED TREATMENT WORKS.**

1    **II.    USE OF PUBLICLY OWNED TREATMENT WORKS FOR DISPOSAL**  
2    **OF CLASS 1 NONHAZARDOUS INDUSTRIAL WASTEWATER**

3    Q.    ARE YOU FAMILIAR WITH THE PROCESSES USED BY THE CITY OF  
4    CONROE IN ACCEPTING A WASTEWATER STREAM AND MAKING  
5    THAT WASTEWATER STREAM APPROPRIATE FOR DISCHARGE INTO  
6    THE SAN JACINTO RIVER?

7    A.    Yes.

8    Q.    ARE YOU FAMILIAR WITH THE TYPE OR TYPES OF WASTEWATER  
9    STREAMS THAT CAN BE RECEIVED BY THE CITY OF CONROE'S  
10   POTW?

11   A.    Yes. The City has requirements for the character and quality of the wastewater  
12   that is introduced into their system and those requirements are based on Texas  
13   Commission on Environmental Quality standards; and so the character and quality  
14   of wastewater that is introduced into a wastewater treatment plant has to meet  
15   predetermined criteria before it is introduced into the plant.

16   Q.    IF A WASTEWATER STREAM MEETS THOSE REQUIREMENTS, WHAT  
17   DOES THE CITY DO TO PROCESS THAT WASTEWATER STREAM  
18   BEFORE THEY THEN DISCHARGE IT INTO THE SAN JACINTO RIVER?

19   A.    There is a sequence of events. A screening process takes out the large  
20   particulates, such as cans and sticks. Then the wastewater stream goes into a  
21   settling tank or settling vat system; and after that settling process, it goes into an  
22   aeration system, which is a microbiological process where air is pumped through  
23   the aeration system to enhance the biodegradation of the waste that is in the



1 wastewater stream. Then after a certain period of time, it is allowed to settle  
2 again and that sediment becomes sludge. You have the supernatant or the liquid  
3 part, which moves on down into the treatment process where there is anaerobic  
4 microbiological process that further biodegrades the wastewater. And then as a  
5 final step before being discharged as effluent from the wastewater treatment plant,  
6 it is disinfected with a suitable disinfectant, in this case chlorine. It is disinfected  
7 before that wastewater is released as effluent in the San Jacinto River. So you  
8 have a process whereby all the particulate material is removed or comes out as  
9 sediment, and then all the aqueous or liquid part is disinfected before it is released  
10 into the San Jacinto River.

11 Q. HAVE YOU REVIEWED THE COMPOUNDS THAT WOULD MAKE UP  
12 THE INDUSTRIAL WASTEWATER STREAMS THAT TEXCOM GULF  
13 DISPOSAL PROPOSES TO ACCEPT FOR INJECTION AT THEIR  
14 UNDERGROUND INJECTION WELL?

15 A. Yes, I have seen that list.

16 Q. WHERE IS THAT LIST LOCATED?

17 A. It is contained in the TexCom application at Exh. 6, labeled "Table IX.E., Waste  
18 Volumes."

19 Q. WAS THAT DOCUMENT PART OF TEXCOM'S PERMIT APPLICATION?

20 A. Yes.

21 Q. IS THERE ANY PROPOSED COMPOUND OR CHEMICAL ON THAT LIST  
22 THAT TEXCOM, IN THEIR APPLICATION, PROPOSES TO ACCEPT THAT

1 CANNOT, IF EFFECTIVELY DEALT WITH, BE PROCESSED THROUGH A  
2 PUBLICLY OWNED TREATMENT WORKS?

3 A. No, there is no material on that list that cannot be handled by a properly  
4 functioning wastewater treatment plant.

5 Q. IS NONHAZARDOUS CLASS 1 INDUSTRIAL WASTEWATER, IN FACT,  
6 THE CATEGORY OF MATERIAL OR WASTEWATER THAT CAN BE  
7 ACCEPTED AT A PUBLICLY OWNED TREATMENT WORKS?

8 A. Yes, it can be accepted at a publicly owned treatment works if the POTW is so  
9 permitted.

10 Q. CAN EVERYTHING ON THAT LIST BE MADE ACCEPTABLE TO THE  
11 CONROE POTW?

12 A. Yes, with a pretreatment process, it can be made acceptable to the Conroe POTW.

13 Q. NOW THEN, IS IT TRUE, DR. PEARCE, THAT IN ORDER FOR A CLASS 1  
14 NONHAZARDOUS WASTEWATER STREAM TO BE ACCEPTED AT A  
15 PUBLICLY OWNED TREATMENT WORKS LIKE CONROE HAS,  
16 SOMETHING WOULD HAVE TO BE DONE TO MAKE THAT  
17 WASTEWATER STREAM ACCEPTABLE FOR THE POTW TO PROCESS  
18 IT?

19 A. That is somewhat difficult to answer because the list is so varied. But everything  
20 that is on that list can be made acceptable to the Conroe POTW with pretreatment  
21 processes.

1 Q. CAN YOU PLEASE DESCRIBE THE TYPE OF PRETREATMENT THAT  
2 MIGHT BE USED TO MAKE A CLASS 1 INDUSTRIAL WASTEWATER  
3 STREAM ACCEPTABLE TO THE CONROE POTW?

4 A. Pretreatment might involve the removal of contaminants by some physical or  
5 chemical method prior to it being introduced to the POTW.

6 Q. REGARDLESS OF THE METHOD USED, IS IT YOUR TESTIMONY THAT  
7 ALL OF THE CLASS 1 NONHAZARDOUS INDUSTRIAL WASTEWATERS  
8 TO BE PROSPECTIVELY RECEIVED BY TEXCOM CAN BE MADE  
9 ACCEPTABLE FOR SENDING THROUGH A POTW IF PROPERLY  
10 PRETREATED?

11 A. Yes, they can be made acceptable for sending through a POTW.

12 Q. DOES THE USE OF A PUBLICLY OWNED TREATMENT WORKS HAVE  
13 ANY RELATIONSHIP TO WHAT MIGHT BE REFERRED TO AS THE  
14 WATER CYCLE, OR KEEPING WATER WITHIN SOMETHING KNOWN AS  
15 THE WATER CYCLE?

16 A. Yes. A POTW is part of that water cycle. A water cycle is a natural process on  
17 the earth where water is maintained in the environment, and it allows that water to  
18 be available for use for a long period of time.

19 Q. PLEASE BRIEFLY DESCRIBE THE WATER CYCLE YOU ARE  
20 REFERRING TO.

21 A. Well, let's just take the San Jacinto River, for example. The San Jacinto River is a  
22 large flowing stream of water; and then over the course of the day, there will be a  
23 lot of evaporation of that water. That moisture that is released into the

1 environment by evaporation collects within the atmosphere, can collect in clouds,  
2 and can create a situation where it rains again. So that same water that has  
3 evaporated off of the San Jacinto River is returned to us as rain over time.  
4 Now, as that rain falls on the earth, it percolates down across the face of the  
5 watershed and reenters the San Jacinto River or reenters ponds, rivers, lakes, and  
6 streams to be made available once again. Some of that water also percolates into  
7 the earth to charge the aquifers that provide the groundwater for us. So it is an  
8 important aspect to remember that when we talk about water availability and  
9 water conservation, the need to maintain the integrity of the volume of water in  
10 the environment is important, too. So specifically the water cycle is this process  
11 whereby the water circulates throughout the earth in many different ways, shapes,  
12 and forms--transpiration, evaporation, percolation; but at some point, all of the  
13 water that is on the face of the earth comes back around. That is the essence of  
14 the water cycle. It is just this process whereby the earth utilizes the water that is  
15 here.

16 Q. SO IS IT FAIR TO SAY THAT UNDERGROUND WATER, SURFACE  
17 WATER, WATER VAPOR, AND RAIN ARE COMPONENT PARTS OF THE  
18 WATER CYCLE?

19 A. Yes.

20 Q. DO YOU HAVE ANY COMMENT ON WHETHER OR NOT MAINTAINING  
21 THE WATER CYCLE IS IMPORTANT ECOLOGICALLY AND IMPORTANT  
22 FOR HUMAN LIFE ON THE EARTH?

1 A. Well, as we learned from Hurricanes Katrina and Rita a few years ago, life does  
2 not go on until you have drinking water that people can use and have confidence  
3 in. So it is very important that we maintain the integrity of the water cycle, that  
4 we conserve water, that we use water appropriately, and that water is made  
5 available appropriately for human use and use by the earth.

6 Q. DOES A PUBLICLY OWNED TREATMENT WORKS ALLOW  
7 WASTEWATER TO BE MAINTAINED AND REUSED THROUGH THE  
8 WATER CYCLE?

9 A. Yes.

10 Q. IS THERE ANYTHING ABOUT A PUBLICLY OWNED TREATMENT  
11 WORKS THAT PERMANENTLY DISPOSES OF THE WASTEWATER THAT  
12 RUNS THROUGH THAT KIND OF SYSTEM?

13 A. No.

14 Q. IN COMPARISON TO A PUBLICLY OWNED TREATMENT WORKS,  
15 WHAT DOES DEEP WELL INJECTION DO WITH RESPECT TO THE  
16 WASTEWATER THAT IS INJECTED 5,000 OR 6,000 FEET  
17 UNDERGROUND?

18 A. When you inject wastewater into an injection well site at 5,000 or 6,000 feet, that,  
19 by design, intends to lock away that water in a stone vault forever; the water is  
20 then removed from the water cycle. That is a situation that creates an imbalance  
21 in the water cycle.

22 Q. WOULD THE INJECTION OF WASTEWATER IN AN UNDERGROUND  
23 INJECTION CONTROL WELL, IF IT IS DONE EFFECTIVELY AND

1 SECURELY, RESULT IN THE PERMANENT REMOVAL OF THE VOLUME  
2 OF WASTEWATER INJECTED?

3 A. Yes. My understanding of the purpose of an underground injection well is to  
4 permanently remove that water from the environment.

5 Q. DO YOU HAVE A PREFERENCE, BASED ON YOUR TRAINING AND  
6 EXPERIENCE, BETWEEN THE USE OF A PUBLICLY OWNED  
7 TREATMENT WORKS VERSUS DEEP WELL INJECTION WITH RESPECT  
8 TO THE WATER CYCLE?

9 A. My opinion is that deep well injection should not be used for disposal of  
10 wastewater. It hides the problem of potential for contamination caused by deep  
11 well injection. That problem has a reasonable solution through a publicly owned  
12 treatment works. It is preferable to leave the water in the environment, which  
13 means sending the wastewater through the publicly owned treatment works. The  
14 wastewater treatment plant is a better alternative, and is the most suitable  
15 alternative for the management of the waste stream or the wastewater stream.

16 Q. DR. PEARCE, DO YOU RECALL BEING ASKED ANY QUESTIONS BY MS.  
17 DIANE GOSS OF THE TCEQ DURING YOUR TESTIMONY AT THE 2007  
18 HEARING IN THIS MATTER CONCERNING THE USE OF A POTW TO  
19 DISPOSE OF AN INDUSTRIAL WASTEWATER STREAM?

20 A. Yes.

21 Q. DO YOU RECALL BEING ASKED A QUESTION ABOUT ADVOCATING  
22 THE DISPOSAL OF AN INDUSTRIAL WASTEWATER STREAM BY A  
23 POTW?

1 A. Yes.

2 Q. IN YOUR CAPACITY AS A SCIENTIST AND IN YOUR 35 PLUS YEARS'  
3 WORK AS A MICROBIOLOGIST, DO YOU EVER ADVOCATE  
4 PROCESSES OR SCIENTIFIC PRACTICES AS PART OF YOUR  
5 PROFESSIONAL SERVICES?

6 A. No, I do not.

7 Q. DR. PEARCE, DOES THE WORD "ADVOCATE" HAVE SOME SPECIAL  
8 MEANING OR SIGNIFICANCE TO YOU AS A SCIENTIST?

9 A. Yes.

10 Q. WHAT IS THE SPECIFIC MEANING OF THE WORD "ADVOCATE" FOR  
11 YOU?

12 A. To me, being an advocate or suggesting advocacy for a particular process means  
13 endorsement of that process and from my scientific perspective, I do not endorse  
14 or advocate specific scientific processes.

15 Q. HOWEVER, DR. PEARCE, DO YOU EXPRESS A SCIENTIFIC OPINION  
16 AND WOULD YOU EXPRESS A SCIENTIFIC PREFERENCE FOR A  
17 PARTICULAR DISPOSAL PROCESS?

18 A. I would give you a scientific opinion on a particular process.

19 Q. BASED ON YOUR TRAINING AND EXPERIENCE, ARE YOU ABLE TO  
20 EXPRESS A SCIENTIFIC PREFERENCE AMONG WASTEWATER  
21 DISPOSAL PROCESSES?

22 A. Yes.

1 Q. WHAT DOES DEEP WELL INJECTION DO TO THE EARTH'S WATER  
2 SUPPLY IF X THOUSANDS OF GALLONS ARE LOCKED AWAY BELOW  
3 THE EARTH'S SURFACE?

4 A. It removes that available water from the water cycle, a natural process. It is no  
5 longer available for our use. We have deliberately locked it away and prevented  
6 the use of that water by mankind on the face of the earth, basically.

7 Q. IS IT YOUR TESTIMONY THAT THE CLASS 1 NONHAZARDOUS  
8 INDUSTRIAL WASTEWATER STREAM THAT TEXCOM PROPOSES TO  
9 ACCEPT, THAT ALL OF THOSE FLUIDS CAN BE MADE SAFE AND,  
10 THEREFORE, THAT WATER CAN BE REUSED BY THE PROCESSES  
11 EMPLOYED IN A PUBLICLY OWNED TREATMENT WORKS?

12 A. Yes.

13 Q. DR. PEARCE, DO YOU HAVE ANY FURTHER CONCERNS OR  
14 MISGIVINGS ABOUT DEEP WELL INJECTION OF CLASS 1  
15 NONHAZARDOUS INDUSTRIAL WASTEWATER?

16 A. From my original testimony, I continue to have a concern with the potential for  
17 contamination of the aquifer with the deep well injection process. There is risk of  
18 a breach in that system and we contaminate an aquifer for all time. That  
19 continues to be a concern, a major concern related to underground injection.

20 Q. IS IT TRUE THAT THE PROCESSING OF CLASS 1 NONHAZARDOUS  
21 INDUSTRIAL WASTEWATER THROUGH A POTW OBVIOUSLY  
22 ELIMINATES ANY CONCERN ABOUT CONTAMINATION THROUGH  
23 DEEP WELL INJECTION?



1 A. Yes, it does. It is a reasonable and suitable alternative to underground injection.

2 Q. WHY ARE YOU IN FAVOR OF AND WHY DO YOU BELIEVE THE USE OF  
3 A POTW FOR DISPOSAL OF CLASS 1 NONHAZARDOUS WASTEWATER  
4 IS BETTER, OR MORE EFFECTIVE, OR MORE DESIRABLE?

5 A. Well, this is a very fundamental question and here is a fundamental answer: a  
6 publicly owned treatment works or wastewater treatment plant is based on the  
7 microbiological aspects of environmental organisms. Those environmental  
8 organisms, their sole function is to break down contaminants that run through the  
9 wastewater treatment process, break down contaminants on the face of the earth.  
10 The wastewater treatment plant facilitates that biodegradability of a wastewater  
11 stream, and that is why the POTW is a much more suitable alternative to the  
12 disposal of the wastewater stream than just trying to hide it, just trying to get it  
13 out of sight, out of mind.

14 Q. DR. PEARCE, DO YOU RECALL A SOMEWHAT LENGTHY  
15 EXAMINATION OF YOU AT THE HEARING IN 2007 CONCERNING THE  
16 LEVEL OF CONTAMINANTS THAT WOULD BE CONTAINED WITHIN  
17 THE EFFLUENT STREAM WHICH IS DISCHARGED BY A POTW INTO A  
18 SURFACE WATER BODY?

19 A. Yes.

20 Q. DO YOU RECALL TESTIFYING THAT NOT ALL OF THE  
21 CONTAMINANTS ARE REMOVED FROM AN EFFLUENT STREAM BY  
22 THE POTW PROCESS?

23 A. Yes.

1 Q. WHEN YOU SAY THAT NOT ALL OF THE CONTAMINANTS ARE  
2 REMOVED FROM AN EFFLUENT STREAM BY THE POTW TREATMENT  
3 PROCESS, WHAT DO YOU MEAN?

4 A. A POTW will remove contaminants to a level that is acceptable for discharge to a  
5 surface water body.

6 Q. DR. PEARCE, IS A BODY OF SURFACE WATER SUCH AS THE SAN  
7 JACINTO RIVER NATURALLY SUBJECTED TO POLLUTANTS OR  
8 CONTAMINANTS?

9 A. Yes.

10 Q. WHAT WOULD SOME OF THOSE POLLUTANTS OR CONTAMINANTS  
11 BE?

12 A. Chemical contaminants such as motor oil, antifreeze, decomposing plastic  
13 materials, discharge from boats and other water vehicles, and exhaust from motor  
14 vehicles would be examples of such pollutants or contaminants.

15 Q. DO ANIMALS DEFECATE IN SURFACE WATER BODIES?

16 A. Yes.

17 Q. DO WILD AND DOMESTIC ANIMALS PERISH AND DECOMPOSE IN  
18 SURFACE WATER BODIES?

19 A. Yes.

20 Q. CAN YOU COMPARE THE NEGATIVE IMPACT OF MANMADE  
21 POLLUTANTS SUCH AS MOTOR FUELS AND PLASTICS, AND  
22 NATURAL CONTAMINANTS SUCH AS DECOMPOSING ANIMALS AND

1           FECAL MATTER, WITH THE IMPACT OF AN EFFLUENT STREAM ON A  
2           SURFACE WATER BODY?

3    A.    Yes.

4    Q.    IS THE EFFLUENT FROM A POTW AS INJURIOUS ON A SURFACE  
5           WATER BODY AS MANMADE AND NATURAL POLLUTANTS OR  
6           CONTAMINANTS LIKE THOSE WE JUST DISCUSSED?

7    A.    No.

8    Q.    IS THERE ANYTHING ELSE THAT ENTERS A SURFACE WATER BODY  
9           THAT COULD BE MORE INJURIOUS THAN A POTW EFFLUENT?

10   A.    Yes, storm water runoff which carries pollutants to surface water bodies, such as  
11          runoff from a field or boat ramp.

12   Q.    HOW OFTEN IS THE EFFLUENT STREAM TESTED OR MONITORED IN A  
13          TYPICAL POTW?

14   A.    Effluent monitoring is done every day. More specifically, the effluent from the  
15          City of Conroe POTW is tested for suitability for discharge into the San Jacinto  
16          River every day.

17   Q.    IS THERE ANY TYPE OF CLASS 1 NONHAZARDOUS INDUSTRIAL  
18          WASTEWATER THAT CANNOT BE EFFECTIVELY SENT THROUGH A  
19          PUBLICLY OWNED TREATMENT WORKS?

20   A.    No.

21   Q.    DR. PEARCE, YOU PREVIOUSLY TESTIFIED THAT YOU HAD AN  
22          OPPORTUNITY TO REVIEW THE PROSPECTIVE WASTEWATER

1 STREAMS THAT TEXCOM PROPOSES TO ACCEPT FOR DISPOSAL,  
2 CORRECT?

3 A. Yes.

4 Q. AND HAVE YOU HAD AN OPPORTUNITY TO LOOK AT THE  
5 COMPOSITION OF THOSE STREAMS?

6 A. Yes, I have.

7 Q. WHAT PERCENTAGE OF THE COMPOUNDS IN THOSE WASTE  
8 STREAMS ARE BIODEGRADABLE?

9 A. 98 percent plus of those compounds are biodegradable.

10 Q. WOULD THOSE COMPOUNDS, AT THE REQUIRED OR PROPER  
11 CONCENTRATION, BE EFFECTIVELY TREATED BY THE  
12 BIODEGRADING PROCESS AT A POTW?

13 A. Yes.

14 Q. THE OTHER 2 PERCENT OR SO THAT YOU ARE TALKING ABOUT  
15 THAT IS NOT BIODEGRADABLE, WHAT WOULD BE DONE TO  
16 EXTRACT THAT FROM A WASTEWATER STREAM?

17 A. Those compounds would be captured in a sludge, and the sludge would be  
18 analyzed and, based on that analysis, those compounds would be disposed of  
19 appropriately.

20 Q. PLEASE BRIEFLY DESCRIBE THE "SLUDGE" YOU REFER TO.

21 A. Sludge is a sediment that develops within a wastewater treatment plant; it consists  
22 of the solids that settle out through the treatment process, and that sludge, of  
23 course, settles out and the liquid portion just continues to move on. The sludge

1 collects in the bottom of the treatment tanks and then periodically it is collected  
2 and dewatered and then disposed of.

3 Q. SO PART OF THE PROCESS AT A WASTEWATER TREATMENT  
4 FACILITY LIKE CONROE'S POTW WOULD BE TO COLLECT AND HOLD  
5 THE WASTEWATER STREAM FOR A PERIOD OF TIME UNTIL MORE  
6 SOLID MATERIAL COLLECTS AT THE BOTTOM OF THE BASIN OR  
7 TANK?

8 A. That is correct.

9 Q. THEN THE LIQUID PORTION OF THAT POOL MOVES ON THROUGH  
10 THE PROCESSING PLANT?

11 A. Yes.

12 Q. ARE NONBIODEGRADABLE COMPONENTS OF AN INDUSTRIAL  
13 WASTEWATER STREAM HEAVIER THAN WATER?

14 A. Yes.

15 Q. IS THE METHOD OF EXTRACTION FOR THESE NONBIODEGRADABLE  
16 COMPONENTS THE USE OF THEIR WEIGHT TO LET THEM SETTLE OUT  
17 OR FALL DOWN TO THE BOTTOM OF THE COLLECTION AREA?

18 A. That is correct.

19 Q. WHAT IS DONE WITH THE SLUDGE OR THE MORE SOLID COLLECTED  
20 MATERIALS AT A WASTEWATER TREATMENT FACILITY?

21 A. Well, there are several options. Sludge can be collected, decontaminated, and  
22 broadcast or spread on soil and plowed into the soil as fertilizer. It can be burned.

1 It can be hauled off and put in a landfill. There are several categories of landfills  
2 depending on the composition of the sludge.

3 Q. OBVIOUSLY THE HAULING OFF OF SOME SLUDGE TO A LANDFILL IS  
4 A DISPOSAL METHOD THAT ESSENTIALLY INVOLVES THROWING IT  
5 AWAY IN SOME KIND OF SECURE OR ACCEPTABLE MANNER. IS  
6 THAT A FAIR STATEMENT?

7 A. Yes.

8 Q. IS A SOLID COMPOUND EASIER TO DISPOSE OF THAN A LIQUID, IN  
9 YOUR EXPERIENCE?

10 A. Yes, a solid compound is easier to dispose of than a liquid.

11 Q. WHY IS THAT?

12 A. It is easier to control and easier to contain. Additionally, the sludge or sediment  
13 out of the wastewater treatment plant is disposed of in landfills that are also  
14 regulated and monitored by the Texas Commission on Environmental Quality. So  
15 there is an entirely unique set of rules and regulations that have to be met for the  
16 disposal of sludge.

17 Q. WOULD YOU PLEASE BRIEFLY DESCRIBE THE MONITORING ASPECTS  
18 OF A PUBLICLY OWNED TREATMENT WORKS WITH RESPECT TO ITS  
19 LIQUID WASTE STREAM, AND ALSO WITH RESPECT TO ANY SOLID  
20 SLUDGE MATERIAL THAT IS REMOVED FROM A POTW?

21 A. The effluent that is discharged by the wastewater treatment plant is monitored  
22 daily. The water within the plant, the in-process water, is monitored daily for  
23 specific criteria. And then the sludge is monitored periodically prior to its

1 disposal in a designated way. So there is a consistent, regulated monitoring  
2 process that the water, the sludge, and effluent have to adhere to in the treatment  
3 of waste streams at a POTW.

4 Q. IN ADDITION TO YOUR PREFERENCE FOR A POTW FOR THE  
5 DISPOSAL OF NONHAZARDOUS INDUSTRIAL WASTEWATER  
6 BECAUSE OF ITS MAINTENANCE OF WATER IN THE WATER CYCLE,  
7 DO YOU HAVE ANY COMMENT ON THE OVERALL SAFETY AND  
8 MONITORING FEATURES OF A POTW IN COMPARISON TO DEEP WELL  
9 INJECTION?

10 A. A POTW by regulation has to routinely and regularly monitor, test, and evaluate  
11 the solids and liquids that come through that plant or that are discharged by that  
12 plant. That is just standard operating procedure. It is regulated by the EPA and  
13 the TCEQ. However, the wastewater that is injected into an underground  
14 injection well is not routinely monitored to the extent it is monitored at a POTW.  
15 So compared to a disposal system that is routinely monitored and routinely tested,  
16 and where there is a history of data for the POTW system, to me that is a much  
17 more consistent and reliable wastewater disposal process. Analytically, a POTW  
18 is a much more consistent and reliable process than just putting something in the  
19 ground and then wondering what happens to it or not having good data to support  
20 what is happening to it.

21 Q. DR. PEARCE, DID YOU HAVE AN OPPORTUNITY PRIOR TO YOUR  
22 ORIGINAL TESTIMONY IN THIS CASE TO REVIEW THE SURFACE  
23 FACILITY PERMIT APPLICATION FOR TEXCOM?

1 A. Yes, I did.

2 Q. WITH RESPECT TO ANY MONITORING AND TESTING OF A  
3 PROSPECTIVELY RECEIVED WASTEWATER STREAM AT TEXCOM'S  
4 PROPOSED SURFACE FACILITY, WHAT COMMENTS DO YOU HAVE  
5 CONCERNING YOUR REVIEW OF THE APPLICATION'S REQUIRED  
6 MONITORING AND TESTING FEATURES?

7 A. As I reviewed that application and considered the need for additional information  
8 to really evaluate the character and quality of what was proposed to be injected,  
9 what really struck me is that there is no monitoring data related to what could be  
10 injected down the well. If there are general descriptions of volume, but not  
11 quantitative numbers as to how much, for example, organic solvents are being  
12 injected in a well, then there is no quantitative data. So that tells me there is no  
13 critical monitoring of what is in that wastewater stream. However, a POTW is  
14 monitored every day for both the quality of the in-process wastewater and the  
15 quality of the effluent. There is a continuous, regulated monitoring and testing  
16 process for a POTW in comparison to an underground injection site like that  
17 proposed by TexCom, for which I have been unable to find any description of  
18 routine monitoring or testing of what is proposed to be injected into the well.  
19 There is a very significant problem with being able to clearly identify what could  
20 be or is being injected into the earth.

21 Q. WITH RESPECT TO PROTECTION OF THE ENVIRONMENT AND  
22 PROTECTION OF HUMAN LIFE IN A COMMUNITY, CAN YOU



1 COMMENT ON WHICH SYSTEM OF DISPOSAL IN YOUR EXPERIENCE  
2 APPEARS TO BE MORE PROTECTIVE?

3 A. In my experience, the POTW is more protective because we know what is in the  
4 effluent; and if there is ever a problem, we know that there is a problem  
5 immediately. With an injection well, you just do not know. So the POTW offers  
6 much more protection and much more monitoring and testing of quality assurance  
7 as it relates to wastewater treatment.

8 Q. IN YOUR EXPERIENCE, AND IN YOUR REVIEW OF TEXCOM'S  
9 APPLICATION, ESPECIALLY THE SURFACE FACILITY APPLICATION,  
10 WHICH METHOD OF DISPOSAL IS MORE PROTECTIVE OF THE PUBLIC  
11 INTEREST?

12 A. The public interest is much more protected by the POTW process as compared to  
13 underground injection.

14 Q. Thank you, Dr. Pearce.